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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,748	02/08/2002	Ping Wai Wan	TR-074 CIP	9642
29382	7590	07/05/2005	EXAMINER	
TROPIC NETWORKS INC. DR. VICTORIA DONNELLY 135 MICHAEL COWPLAND DRIVE KANATA, ON K2M 2E9 CANADA			PAYNE, DAVID C	
			ART UNIT	PAPER NUMBER
			2638	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/067,748

Applicant(s)

WAN ET AL.

Examiner

David C. Payne

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 February 2002.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-30 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/24/03.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

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**DETAILED ACTION*****Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 3, 10, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fines et al. US 5,974,094 A (Fines).

Re claim 1, 10, 14, 16, Fines disclosed

an m-PFSK transmission spectrum (Fig. 9) comprising a range of m discrete frequency slots or tones ( $D_0$  (25) to  $D_{m-1}$  (35)) separated from one another by a spacing frequency  $f_s$  and all lying within a frequency range or bandwidth B. A high pilot signal  $P_H$  (36) has a frequency or tone spaced by a frequency  $f_p$  above the highest frequency ( $D_{m-1}$ ) of the bandwidth B. A low pilot signal  $P_L$  (37) has a frequency or tone spaced by a frequency  $f_p$  below the lowest frequency ( $D_0$ ) of the bandwidth B. Data is transmitted from a source by modulating a carrier (not shown) with a data signal  $D_m$  at one of the tones m (25) to (35) within the bandwidth B and with both of the pilot signals (36, 37), see col./lines: 3/66-67, 4/1-15. Fines does not disclose coherent averaging of the dither tones, per se. However, it would have been obvious to one of ordinary skill in the art at the time of invention that while the phases are not coherent, they are semi-coherent, which is acceptable because the average phase of each signal sample will be corrected by the average phase of the respective average phase of the pilot sample. That is to say the detection is semi-coherent because each signal sample is corrected by a different amount depending on the phase of the respective pilot sample, see col./lines: 7/1-10.

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Re claims 2 and 3, Fines disclosed

that the samples are processed by a Discrete Fourier Transform (DFT) processor (53 of Fig. 10) which converts the N complex samples from the time domain into a set of N complex samples in the frequency domain, by way of Fast Fourier Transforms (FFTs), see *col./lines: 5/50-55*.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fines et al. US 5,974,094 A (Fines) in view of Fuse et al. US 6078412 A (Fuse).

Re claim 4, Fines disclosed the aforementioned invention but does not disclose the use of transforms such as Discrete Cosine Transform (DCT).

Fuse disclosed the use of DCT in time/frequency conversion, see *col./lines: 11/25-30*. It would have been obvious to one of ordinary skill in the art at the time of invention to use DCT in the Fines invention since it is widely used in compression methods and it is known to be close to optimal in terms of its energy compaction capabilities and can be computed via a fast algorithm.

5. Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fines et al. US 5,974,094 A (Fines) in view of Hill, G.R., et al, "A Transport Network Layer Based on Optical Network Elements", Journal of Lightwave Technology, IEEE, New York, USA, Vol. II, No. 5/6, 1 May 1993, pp. 667-676 (Hill).

Re claim 11 and 15,

Fines disclosed the aforementioned invention but does not disclose an optical WDM network where each wavelength is subject to modulation with a dither tone. Hill disclosed a WDM system, incorporation pilot (dither) tones, p.674 right column. It would have been obvious to one of ordinary skill in the art at the time of invention to use pilot tones to identify signals in a WDM system since the dither (pilot) tones can be easily multiplexed in each wavelength and recovered distinctly at the receiver.

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6. Claims 5, 6, 12, 17 – 23, and 25 – 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Fines et al. US 5,974,094 A (Fines) in view of Honda US 5216417 A (Honda).

Re claims 5, 6, 12 and 17, 22, 23, 25 - 27

Fines disclosed the aforementioned invention but does not disclose selectively alternating between two dither tones. Honda disclosed selectively alternative between dither tones, *see col./lines: 4/14-20*.

It would have been obvious to one of ordinary skill in the art at the time of invention to use pilot tones to alternate between dither tones to create a unique pattern not available with two dither tones alone.

Re claims 18 and 20, as previously mentioned

Fines disclosed that the phases are not coherent, they are semi-coherent, which is acceptable because the average phase of each signal sample will be corrected by the average phase of the respective average phase of the pilot sample. That is to say the detection is semi-coherent because each signal sample is corrected by a different amount depending on the phase of the respective pilot sample, *see col./lines: 7/1-10*.

Re claims 19, 21 and 28, Fines disclosed

that the samples are processed by a Discrete Fourier Transform (DFT) processor (53 of Fig. 10) which converts the N complex samples from the time domain into a set of N complex samples in the frequency domain, by way of Fast Fourier Transforms (FFTs), *see col./lines: 5/50-55*.

7. Claims 9, 13, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fines et al. US 5,974,094 A (Fines) and Honda US 5216417 A (Honda) as applied to claims 6, 12 and 28 above, and in further view of Hill, G.R., et al, "A Transport Network Layer Based on Optical Network Elements", Journal of Lightwave Technology, IEEE, New York, USA, Vol. II, No. 5/6, 1 May 1993, pp. 667-676 (Hill).

Re claim 9, 13 and 29, the modified invention of Fines and Honda as taught does not disclose an optical WDM network where each wavelength is subject to modulation with a dither tone. Hill

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disclosed a WDM system, incorporation pilot (dither) tones, p.674 right column. It would have been obvious to one of ordinary skill in the art at the time of invention to use pilot tones to identify signals in a WDM system since the dither (pilot) tones can be easily multiplexed in each wavelength and recovered distinctly at the receiver.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fines et al. US 5,974,094 A (Fines) in view of Crookshanks US 4747095 A (Crookshanks).

Re claim 7, Fines disclosed the aforementioned invention but does not disclose a synchronization method for the dither tones. Crookshanks discloses such a method, *see e.g., col./lines: 12/48-60*. It would have been obvious to one of ordinary skill in the art at the time of invention to synchronize Fines in the method of Crookshanks since the use of a single pair of synchronization signals results in the dedication of a smaller fraction of the SAW demodulator bandwidth for use in generating synchronization signals, thereby providing more bandwidth which can be used for communication purposes.

9. Claims 8, 24 and 30, are rejected under 35 U.S.C. 103(a) as being unpatentable over Fines et al. US 5,974,094 A (Fines) and Honda US 5216417 A (Honda) as applied to claims 5, 23 and 28 above, and in further view of Crookshanks US 4747095 A (Crookshanks).

Re claims 8, 24 and 30, the modified invention of Fines and Honda disclosed the aforementioned invention but does not disclose a synchronization method for the dither tones. Crookshanks discloses such a method, *see e.g., col./lines: 12/48-60*. It would have been obvious to one of ordinary skill in the art at the time of invention to synchronize modified invention in the method of Crookshanks since the use of a single pair of synchronization signals results in the dedication of a smaller fraction of the SAW demodulator bandwidth for use in generating synchronization signals, thereby providing more bandwidth which can be used for communication purposes.

### **Conclusion**

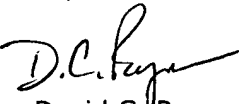
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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dcp

  
David C. Payne  
Patent Examiner  
AU 2638